Notice of Allowability	Application No.	Applicant(s)	
	09/661,103	DUBROVSKY ET AL.	
	Examiner	Art Unit	
	Thomas Duong	2145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *November 28, 2005*.

2. ☒ The allowed claim(s) is/are *1-44*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

JASON CARDONE
SPE 2145

DETAILED ACTION

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Paul P. Kriz (Reg. No. 45,752) on November 28, 2005.

3. The application has been amended as follows:

   (Please see attachment sheet entitled "EMC00-01(00010) - Proposed renumbering of claims").

Response to Arguments

4. The Applicants' arguments and amendments filed on November 28, 2005 have been fully considered and are persuasive.

Allowable Subject Matter

5. *Claims 1-44* are allowed. The claims indicated include limitations that the prior arts of record do not appear to teach or render obvious, hence they are allowed.

6. The following is an examiner's statement of reasons for allowance:

As presented in the previous office action, Nolan et al. (US006640278B1) discloses *a system for managing storage resources in a storage network according to storage domains, which includes logic to configure a set of storage locations from one or more storage systems in the network as a storage domain and elements providing multi-protocol support across the plurality of communication interfaces, ... [including] a management interface for configuring the storage domains, logic for translating a storage transaction traversing the plurality of communication interfaces into and out of a common format for routing within the system among the plurality of communication interface.* However, the prior arts of record fail to teach or suggest individually or in combination as stated in the independent claims for *"performing functions associated with the at least one vendor specific device command to control which of multiple ports in the device shall be grouped together to form a zone through which servers are able to access a data storage system in the storage network; and configuring multiple server ports and multiple data storage ports of the device to be in the zone, the multiple server ports associated with the zone handling a transfer of data between a server and the device, the multiple data storage ports associated with the zone handling a transfer of data between the device and the data storage system"* and in combination with other limitations as set forth in the independent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas Duong whose telephone number is 571/272-3911. The examiner can normally be reached on M-F 7:30AM - 4:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason D. Cardone can be reached on 571/272-3933. The fax phone numbers for the organization where this application or proceeding is assigned are 571/273-8300 for regular communications and 571/273-8300 for After Final communications.

Thomas Duong (AU2145)

December 9, 2005

Jason D. Cardone

Supervisory PE (AU2145)

EMC00-01(00010) - Proposed renumbering of claims

1. A method for controlling zoning within a device of a storage network, the method comprising the steps of:

receiving a generic zone control command that controls a configuration of zoning in the storage network;

translating the generic zone control command to at least one vendor specific device command of a plurality of vendor specific device commands that respectively control zoning in a plurality of different vendor devices; and

performing functions associated with the at least one vendor specific device command to control ~~zoning in the device~~ which of multiple ports in the device shall be grouped together to form a zone through which servers are able to access a data storage system in the storage network; and

configuring multiple server ports and multiple data storage ports of the device to be in the zone, the multiple server ports associated with the zone handling a transfer of data between a server and the device, the multiple data storage ports associated with the zone handling a transfer of data between the device and the data storage system.

2. (Currently Amended) The method of claim 1 wherein the step of translating includes the steps of:

identifying a vendor of the ~~at least one~~ device associated with ~~within a~~ the zone corresponding to the generic zone control command; and

selecting a set of vendor specific device commands, from the plurality of vendor specific device commands that respectively control zoning in devices from different vendors, that corresponds to the vendor of the ~~at least one~~ device within the zone.

3. (Currently Amended) The method of claim 2 wherein the step of selecting a set of vendor specific device commands selects the set of vendor specific device

commands that are specific to a vendor of the a device that exists within the zone to which the generic zone control command is directed.

4. (Currently Amended) The method of claim 2 wherein the step of identifying includes the steps of:

identifying devices associated with ~~within~~ the zone that are affected by the generic zone control command; and

identifying vendors of the devices associated with ~~within~~ the zone that are affected by the generic zone control command.

5. (Currently Amended) The method of claim 1 wherein:

the plurality of vendor specific device commands include sets of vendor specific device commands; and

wherein the step of translating includes the steps of:

selecting a set of vendor specific device commands that can control zoning within the ~~a~~ device to which the generic zone control command is directed; and

dynamically loading the set of vendor specific device commands into a management application to allow the management application to control zoning within the device to which the generic zone control command is directed.

6. (Original) The method of claim 5 wherein the step of translating includes steps of:

selecting the at least one vendor specific device command, within the set of vendor specific device commands, that performs zoning operations, in the device to which the generic zone control command is directed, in accordance with the generic zone control command; and

mapping parameters of the generic zone control command to parameters of the at least one vendor specific device command to provide the vendor

specific device command with data required to perform the zoning operations in the device.

7. (Original) The method of claim 5 wherein the set of vendor specific device commands is selected based on an identity of a vendor of the device to which the generic zone control command is directed.

8. (Currently Amended) The method of claim 1 wherein the step of receiving receives the generic zone control command from a device management application that ~~can~~ controls ~~control~~ zoning in a network of devices manufactured by different vendors.

9. (Currently Amended) The method of claim 1 wherein the step of performing performs the at least one vendor specific device command to control zoning within the ~~a~~ device from a vendor that is a vendor of devices that are controlled by the vendor specific device command for ~~to~~ which the generic zone control command is translated.

10. (Currently Amended) The method of claim 1 wherein the step of translating includes the steps of:

loading a library of vendor specific device commands into a management application based on an identity of a vendor of the ~~a~~ device affected by the generic zone control command; and

calling the at least one vendor specific device command using the generic zone control command having the same format as the at least one vendor specific device command perform zoning operations within the device affected by the generic zone control command.

11. (Currently Amended) The method of claim 1 wherein the steps of receiving, translating and performing are processed by a management application that controls zoning within switches in the ~~a~~ data storage network and wherein the

step of translating includes a step of loading a dynamically linked library of vendor specific device commands, selected based on a vendor of the a device affected by the generic zone control command, into a memory for use by the management application to control zoning in the device.

12. (Previously Presented) A method as in claim 1, wherein the steps of receiving, translating and performing are executed by a management application operating in a management station computer system, the management application controlling zoning within switches by transmitting the at least one vendor specific device command over a network to a corresponding at least one vendor specific switch device after translation of the generic zone control command.

13. (Previously Presented) A method as in claim 12, wherein the management application receives the generic zone control command and, in response, generates i) a corresponding first vendor specific command for transmission to a first vendor switch device type, and ii) a corresponding second vendor specific command for transmission to a second vendor switch device type.

14. (Previously Presented) A method as in claim 13, wherein both the first vendor specific command and the second vendor specific command pertain to a common zoning function supported by a first switch device and a second switch device to which the first vendor specific command and the second vendor specific command are transmitted.

15. (Previously Presented) A method as in claim 14 further comprising:

identifying that there is no need to map the generic zone control command to corresponding at least one vendor specific device commands; and

utilizing the generic zone control command to carry out zone control operations.

16. (Currently Amended) A method as in claim 1 further comprising:

at a remote node over a network, generating i) a corresponding first vendor specific command, based on the generic zone control command, for transmission to a first switch device type, and ii) a corresponding second vendor specific command, based on the generic zone control command, for transmission to a second switch device type; and

from the remote node, transmitting i) the corresponding first vendor specific command to a switch device of the first switch device type, and ii) transmitting the corresponding second vendor specific command for transmission to a switch device of the second switch device type, to control zoning associated with hosts and corresponding data storage resources in the ~~a~~ storage network.

17. (Currently Amended) A method as in claim 1, wherein receiving the generic zone control command includes receiving a configuration command to configure the a zone in the device to support access in a storage area network.

18. (Currently Amended) A method as in claim 1 ~~claim 38~~, wherein the device is a storage network switch; and

wherein steps of receiving, translating, and performing are executed in a network manager device that configures the zone associated with the device, the zone indicating which of multiple servers coupled to the device is capable of accessing selected portions of the data storage system.

19. (Previously Presented) A method as in claim 1 further comprising:

identifying to which type of vendor device in a storage area network the generic zone control command pertains;

if the generic zone control command pertains to a first vendor type of device, forwarding the generic zone control command to the first vendor type of device; and

if the generic zone control command pertains to a second vendor type of device, translating the generic zone control command to a vendor

specific zone control command associated with the second vendor type of switch and forwarding the vendor specific zone control command to the second vendor type of device.

20. (Previously Presented) A method as in claim 1 further comprising:

executing steps of receiving, translating and performing in a management application operating in a management station computer system at a remote location with respect to the device to which the generic zone control command pertains, the device residing in a storage area network managed by the management application, the management application controlling a zoning configuration in the device by transmitting the at least one vendor specific device command over a network to the device after translation of the generic zone control command into the at least one vendor specific command.

21. (Previously Presented) A method as in claim 20, wherein the management application receives the generic zone control command and, in response, generates and transmits i) a corresponding first vendor specific command for transmission to a first vendor device type in the storage area network based on translation of the generic zone control command, and ii) a corresponding second vendor specific command for transmission to a second vendor device type in the storage area network based on translation of the generic zone control command, both the first device type and the second device type implementing access control according to zone configuration settings as initiated by the generic zone control command.

22. (Previously Presented) A method as in claim 21, wherein both the first vendor specific command and the second vendor specific command pertain to a common zoning function supported by the first device type and the second device type to which the first vendor specific command

and the second vendor specific command are respectively transmitted, the common zoning function providing access control for servers attempting to retrieve data from respective storage systems over a storage area network in which the first device type and the second device type reside.

23. (Previously Presented) A method as in claim 1, wherein translating the generic zone control command includes:

in response to receipt of the generic zone control command at a management station of a storage area network that configures zoning in the storage area network at a remote location with respect to the plurality of different vendor devices that reside in the storage area network, identifying multiple zone management devices in the storage area network to which the generic zone control command pertains, the zone management devices being of at least two different vendor types, each of which understands a different set of zone configuration commands, the zone management devices enabling a host to retrieve data from a storage system in the storage area network;

identifying vendor types associated with the multiple zone management devices;

in response to identifying the vendor types associated with the multiple zone management devices, selecting respective sets of vendor specific device commands understood by respective vendor types of the zone management devices to which the generic zone control command pertains;

for each of the at least two different vendor types of zone management devices:

based on the respective sets of vendor specific device commands, determining whether the generic zone control command needs to be translated to a corresponding zone configuration command understood by a respective vendor type of zone management device or whether the respective vendor type of

device can interpret the generic zone configuration command and needs no translation;

if translation is required, mapping parameters of the generic zone control command to parameters of a respective vendor specific device command to be forwarded to the respective vendor type of zone management device for configuring its corresponding zone settings;

if no translation is required, initiating transmission of the generic zone control command to the respective vendor type of zone management device in order to configure corresponding zone settings of the respective vendor type of zone management device.

24. (Currently Amended) A computer system configured to control zoning in a plurality of devices from different vendors in a network, the computer system comprising:

an input-output interface;

a processor; and

a memory system coupled to the processor and to the input-output interface and

encoded with instructions that form a multi-zone management application that, when performed on the processor, cause the computer system to:

receive, via the input-output interface, a generic zone control command;

translate the generic zone control command to at least one vendor specific device command of a plurality of vendor specific device commands that respectively control zoning in a plurality of different vendor devices coupled to the input-output interface; and

perform the at least one vendor device specific command to control zoning in a device coupled to the input-output interface;

wherein the instructions that control zoning within the device, and when performed on the processor, cause the computer system to control which of

multiple ports in the device shall be grouped together to form a zone through which servers are able to access a data storage system in a storage area network; and

wherein the instructions that control which of multiple ports in the device shall be grouped together to form the zone, when performed on the processor, cause the computer system to configure multiple server ports and multiple data storage ports of the device to be in the zone, the multiple server ports associated with the zone handling a transfer of data between a server and the device, the multiple data storage ports associated with the zone handling a transfer of data between the device and the data storage system.

25. (Original) The computer system of claim 24 further including:

a multi-zone command database containing the plurality of vendor specific device commands; and

wherein the multi-zone management application encoded within the memory system includes instructions that, when performed on the processor, cause the computer system to:

identify a vendor of at least one device within the zone corresponding to the generic zone control command;

select a set of vendor specific device commands, from the plurality of vendor specific device commands in the multi-zone command database, that corresponds to the vendor of at least one device within the zone; and

map the generic zone control command to at least one vendor specific device command within the set of vendor specific device commands.

26. (Original) The computer system of claim 25 wherein the instructions that select, when performed on the processor, cause the computer system to select the set of vendor specific device commands that are specific to a vendor of a device within the zone to which the generic zone control command is directed.

27. (Original) The computer system of claim 25 wherein the instructions that identify, when performed on the processor, cause of the computer system to:

identify devices within the zone that are affected by the generic zone control command; and

identify vendors of the devices within the zone that are affected by the generic zone control command.

28. (Currently Amended) The computer system of claim 24 wherein:

the plurality of vendor specific device commands within the multi-zone command database include sets of vendor specific device commands; and

wherein the instructions that translate, when performed on the processor, cause the computer system to:

select a set of vendor specific device commands that can control zoning within the ~~a~~ device to which the generic zone control command is directed; and

dynamically load the set of vendor specific device commands into the memory system to allow the management application to control zoning within the device to which the generic zone control command is directed.

29. (Original) The computer system of claim 28, wherein the instructions that translate, when performed on the processor, cause the computer system to:

select the at least one vendor specific device command, within the set of vendor specific device commands, that performs zoning operations, in the device to which the generic zone control command is directed, in accordance with the generic zone control command; and

map parameters of the generic zone control command to parameters of the at least one vendor specific device command to provide the vendor specific device command with data required to perform the zoning operations in the device.

30. (Original) The computer system of claim 28 wherein the instructions that select the set of vendor specific device commands, when executed, cause the computer system to select the set of the vendor specific device commands based on an identity of a vendor of the device to which the generic zone control command is directed.

31. (Original) The computer system of claim 24 wherein the multi-zone management application is a device management application that can control zoning in a network of switches from different vendors, the network coupled to the input-output interface.

32. (Currently Amended) The computer system of claim 24 wherein the instructions that perform, when performed on the processor, cause the computer system to perform the at least one vendor specific device command to control zoning within the ~~a~~ device from a vendor that is a vendor of devices that are controlled by the vendor specific device command to which the generic zone control command is mapped.

33. (Original) The computer system of claim 24 wherein the instructions that translate, when performed on the processor, cause the computer system to load a library of vendor specific device commands into a management application based on a vendor of a device affected by the generic zone control command to allow the management application to perform vendor specific device commands in order to carry out the generic zone control command within the device affected by the generic zone control command.

34. (Original) The computer system of claim 24 wherein the instructions that translate, when performed on the processor, cause the computer system to load a dynamically linked library of vendor specific device commands, selected by a device identifier coupled to the memory system, based on a vendor of a device

affected by the zoning control command, into the memory system for use by the management application to control zoning in the device.

35. (Original) The computer system of claim 24 wherein the memory system is encoded with at least one command mapping that indicates how the generic zone control command corresponds to the vendor specific device command for a specific vendor device, and wherein the instructions that translate use the command mapping to map the generic zone control command to a format required by the vendor device specific command within the vendor device specific command set.

36. (Currently Amended) A computer system as in claim 24, wherein the instructions that receive the generic zone command, when performed on the processor, cause the computer system to receive a configuration command to configure the a zone in the device to support access to a storage area network.

37. (Previously Presented) A computer system as in claim 36, wherein the device is a storage network switch; and

wherein the instructions that receive, translate, and perform are executed in a network manager device that configures the zone associated with the device, the zone indicating which of multiple servers coupled to the device is capable of accessing selected portions of the data storage system.

38. (Previously Presented) A computer system as in claim 24 further including instructions to support operations of:

identifying to which type of vendor device in a storage area network the generic zone control command pertains;

if the generic zone control command pertains to a first vendor type of device, forwarding the generic zone control command to the first vendor type of device; and

if the generic zone control command pertains to a second vendor type of device, translating the generic zone control command to a vendor specific zone control command associated with the second vendor type of switch and forwarding the vendor specific zone control command to the second vendor type of device.

39. (Currently Amended) A computer program product having a computer-readable medium including computer program logic encoded thereon that when performed on a computer system provides a method for controlling zoning within a device, and wherein when the computer program logic is performed on a processor in the computer system, the computer program logic causes the processor to perform the operations of:

receiving a generic zone control command;

translating the generic zone control command to at least one vendor specific device command of a plurality of vendor specific device commands that respectively control zoning in a plurality of different vendor devices; and

performing the at least one vendor specific device command to control ~~zoning in a device~~ which of multiple ports in the device are grouped together to form a zone through which servers are able to access a data storage system in a storage area network; and

configuring multiple server ports and multiple data storage ports of the device to be in the zone, the multiple server ports associated with the zone handling a transfer of data between a server and the device, the multiple data storage ports associated with the zone handling a transfer of data between the device and the data storage system.

40. (Currently Amended) The computer program product of claim 39 wherein the plurality of vendor specific device commands includes sets of vendor specific device commands and wherein the computer program logic that causes the processor to perform the operation of translating, when performed on the processor, causes the processor to perform a operations of:

selecting a set of vendor specific device commands that can control zoning within the a device to which the generic zone control command is directed; and

dynamically loading the set of vendor specific device commands into a management application to allow the management application to control zoning within the device to which the generic zone control command is directed.

41. (Original) The computer program product of claim 39 wherein the computer program logic that, when performed on the processor, causes the processor to perform the operation of translating, further includes instructions that, when performed on the processor, cause the processor to perform the operations of:

selecting the at least one vendor specific device command, within the set of vendor specific device commands, that performs zoning operations, in the device to which the generic zone control command is directed, in accordance with the generic zone control command; and

mapping parameters of the generic zone control command to parameters of the at least one vendor specific device command to provide the vendor specific device command with data required to perform zoning operations in the device.

42. (Currently Amended) A management application that operates to control zoning in devices from different vendors in a data storage network, the management application comprising:

a management application user interface that receives a generic zone control command;

a multi-vendor application programming interface coupled to the multi-zone management application user interface, the multi-vendor application programming interface obtaining from a multi-zone command database, based on the generic zone control command, a vendor specific command set containing functions that control zoning in a device associated with the generic zone control command;

a command mapping accessible by the multi-vendor application programming interface, the command mapping defining mappings between parameters from the generic zone control command to parameters required by the vendor specific commands within the vendor specific command set; ~~and~~

the multi-vendor application programming interface using the command mapping to map the generic zone control command to at least one vendor specific command and performing the at least one vendor specific command to control zoning within a specific vendor device associated with the generic zone control command;

wherein the management application controls which of multiple ports in the device shall be grouped together to form a zone through which servers are able to access a data storage system in a storage area network; and

wherein the management application configures multiple server ports and multiple data storage ports of the device to be in the zone, the multiple server ports associated with the zone handling a transfer of data between a server and the device, the multiple data storage ports associated with the zone handling a transfer of data between the device and the data storage system.

43. (Currently Amended) In a network management application operating in a management station computer system controlling zoning of different vendor types of data switches in a network, a method comprising:

receiving a generic zone control command;

identifying at least two different vendor specific types of switch devices to which the generic zone control command pertains;

translating the generic zone control command into corresponding vendor specific device commands for the at least two different vendor specific types of switch devices; ~~and~~

transmitting the vendor specific device commands over the network to the at least two different vendor specific types of switch devices;

wherein the receiving, identifying, translating and transmitting are executed by a management application that controls zoning within the at least two different vendor specific types of switch devices;

wherein the management application controls which of multiple ports in the at least two different vendor specific types of switch devices shall be grouped together to form a zone through which servers are able to access a data storage system in a storage area network; and

wherein the management application configures multiple server ports and multiple data storage ports of the switch devices to be in the zone, the multiple server ports associated with the zone handling a transfer of data between a server and the switch devices, the multiple data storage ports associated with the zone handling a transfer of data between the switch devices and the data storage system.

44. (Currently Amended) A method as in claim 43 ~~claim 34~~ further comprising:

identifying that there is no need to map the generic zone control command into different vendor specific device commands; and

utilizing the generic zone control command to carry out zone control operations.